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TCS-5636/59
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3 August 1959

MEMORANDUM FOR: Director, PIC
THROUGH: Chief, Technical Intelligence Services Div.
SUBJECT: Evaluation, Color Aerial Photography

1. The following evaluation of aerial films represents the observations and conclusions resulting from a non-technical inspection of the film exposed during "Red DOT" missions 43, 44, and 45. (Rolls 1-3, 4-6, and 7-9 respectively)

a. Rolls 1 and 4 appear to be color negatives and would consequently pose a major problem in interpretation for the analyst would need a facility for the mental reversal of the hues and chroma as imaged. Comparisons of resolution between these films and black and white negative rolls 3 and 6, show a considerably lower resolution in the color negatives.

b. Rolls 2, 5, 7, and 8 are color positives and when evaluated in comparison with the companion black and white negatives lead to the following observations.

(1) High contrast resolution of the color positives is approximately 15% lower than that of the black and white negatives.

(2) The discernibleness of low contrast density changes is less on the color positives than on the black and white negatives.

(3) The apparent grain structure of the color positives is larger and more evident than that of the black and white negatives.

(4) As might be deduced from the foregoing three observations, object image edges are less clearly defined on the color film.

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(5) Color films suffer variations of color presentation within individual frames (color blotching and streaking), and further show overall color differences as a probable function of time lapse with its attendant changes in light temperature.

(6) Some gain in information was derived from the color film when that information was presented as an object color.

(7) The color film failed to yield as much information as the black and white film when the recognition of small objects was the necessary key to identification.


(8) For extracting intelligence information from the color films examined, the best results were obtained with the EAT E-2 emulsion and an HF 3 filter.

c. Conclusions:

(1) Color film proved to be inferior to black and white film in resolution, grain, and the presentation of discreet tonal differences.

(2) Color film is capable of yielding considerable useful information, particularly when that information is best demonstrated through object hue rather than the customary size, shape, tone, and shadow identifiers.

(3) The use of color film could add to the intelligence yield of aerial photography if color were used as a source of supplementary coverage to the higher acuity black and white film.


Chief, Operations Support Branch

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